

11 Bushfire

11.1 Assessment objectives

The DGRs for the Cobbora Coal Project require an assessment of hazards associated with the Project, including bushfires.

11.2 Assessment method

A bushfire assessment was prepared by EMM (Appendix J) and the results are summarised in this chapter. Other hazards are summarised in Chapter 22 ('Hazard and risk assessment').

11.2.1 Assessment guidelines

i Planning for Bushfire Protection

Section 2.5 of the NSW Rural Fire Service (RFS) and DP&I document *Planning for Bush Fire Protection Guideline* (RFS 2006) (PBP) requires proponents of major projects to consult the PBP when making environmental assessments. The PBP focuses on protection of habitable buildings from bushfire. The bushfire assessment was prepared in accordance with the PBP.

ii Coolah Local Environmental Plan 2000

The built components of the Project potentially susceptible to bushfire are in an area covered by the Coolah LEP 2000. Clause 26 (a, b and c) of the LEP requires Council to consider whether adequate provision has been made for fire protection before granting consent to buildings on land subject to bushfire hazards. The Project does not require Council consent as it will be assessed under Part 3A. Despite that, this assessment has been prepared in accordance with the PBP, which covers the LEP items.

11.2.2 Characterisation of the existing environment

The following Project buildings were considered in the bushfire assessment:

- infrastructure area, including explosives magazine and dangerous goods depot;
- temporary construction accommodation village;
- coal handling and preparation plant;
- locomotive provisioning shed; and
- rail siding.

The following Project buildings were not considered in the bushfire assessment as they will not be within 100 m of bushfire-prone land, and therefore do not require assessment under the PBP:

- switching yard; and
- substation.

The majority of Project buildings will be in a section of Warrumbungle LGA covered by the Coolah LEP, and will be on bushfire-prone land according to the LGA's bushfire-prone land map. The pump station is on the Cudgegong River in the Mid-Western Regional LGA and will not be within 100 m of bushfire-prone land, and therefore does not require assessment under the PBP.

Areas surrounding Project buildings were characterised in terms of vegetation communities and slope classes in accordance with Appendix 4 of the PBP to determine appropriate asset protection zones (APZs).

i Vegetation

The PBP uses a modified version of the 'Keith formations' (Keith 2004) to classify bushfire hazard vegetation (the PBP classifications). The bushfire hazard classification of native vegetation (Appendix H) was determined within 100 m of Project buildings on bushfire-prone land based on the PBP classifications. Where there will be two or more vegetation types in this area, vegetation providing the greatest bushfire hazard was considered to predominate.

ii Slope

The slope within 100 m of Project buildings on bushfire-prone land was determined using a digital terrain model (1 m height resolution). The slopes were classified according to the PBP:

- i) All upslope vegetation (considered 0°);
- ii) >0 to 5° downslope vegetation;
- iii) >5 to 10° downslope vegetation;
- iv) >10 to 15° downslope vegetation; and
- v) >15 to 18° downslope vegetation.

11.2.3 Bushfire prevention and protection

APZs, maintenance requirements and specifications for service and access provision were determined in accordance with the PBP.

i Asset protection zones

An APZ provides a building set back from bushfire hazard vegetation. APZs provide fire vehicle access, reduce radiant heat, reduce convection winds, reduce ember attack and allow smoke to disperse. APZs are divided into an 'inner protection area' and an 'outer protection area' where there is adjacent vegetation the PBP classifies as forest. An inner protection area is only required where there is adjacent vegetation the PBP classifies as woodland.

APZs were determined using the PBP bushfire hazard vegetation classification, highest slope classes near Project buildings and the fire weather or 'fire danger index'. The fire danger index for Warrumbungle LGA, 80, was used in the assessment.

ii Services, access and operations

The PBP was used to determine protection measures for electricity and gas services, provision of water for fire fighting and access to and within the Project.

iii Bushfire construction levels

The PBP requires an assessment to determine whether specified non-industrial buildings are capable of complying with the bushfire construction levels described in Australian Standard 3959 - 2009 Construction of Buildings in Bushfire Prone Areas (AS 3959 - 2009). The specified buildings are those classified by the *Building Code of Australia* (BCA 2011) as class 1, 2, 3, and 4 buildings; and in some cases class 9 and 10 buildings.

As the majority of Project buildings will be industrial they will only have general bushfire construction levels specified in AS 3959 - 2009. There will be about 100 dwellings in the temporary construction accommodation village. These could be Building Code of Australia building class 1, 2 or 3. A bushfire attack assessment was therefore undertaken for buildings at the periphery of the temporary construction accommodation village most susceptible to bushfire attack.

The bushfire attack assessment used the predominant bushfire hazard vegetation, the distance of the vegetation from the building, slope, and bushfire attack level to determine the bushfire construction level (AS 3959 - 2009).

11.3 Existing environment

11.3.1 Vegetation

Vegetation communities (Keith formations) near Project buildings comprise dry sclerophyll forest (shrubby sub-formation), grassy woodland, Cypress pine woodland, Dwyer's red gum-currawang woodland, semi-arid woodland (scrubby sub-formation), dry sclerophyll forest (shrub/grass sub-formation) and tall heath (scrub) [regrowth] (Figure 11.1). Based on the PBP classifications, the predominant bushfire hazard vegetation formations (PBP classification) are forest and woodland (Figure 11.1).

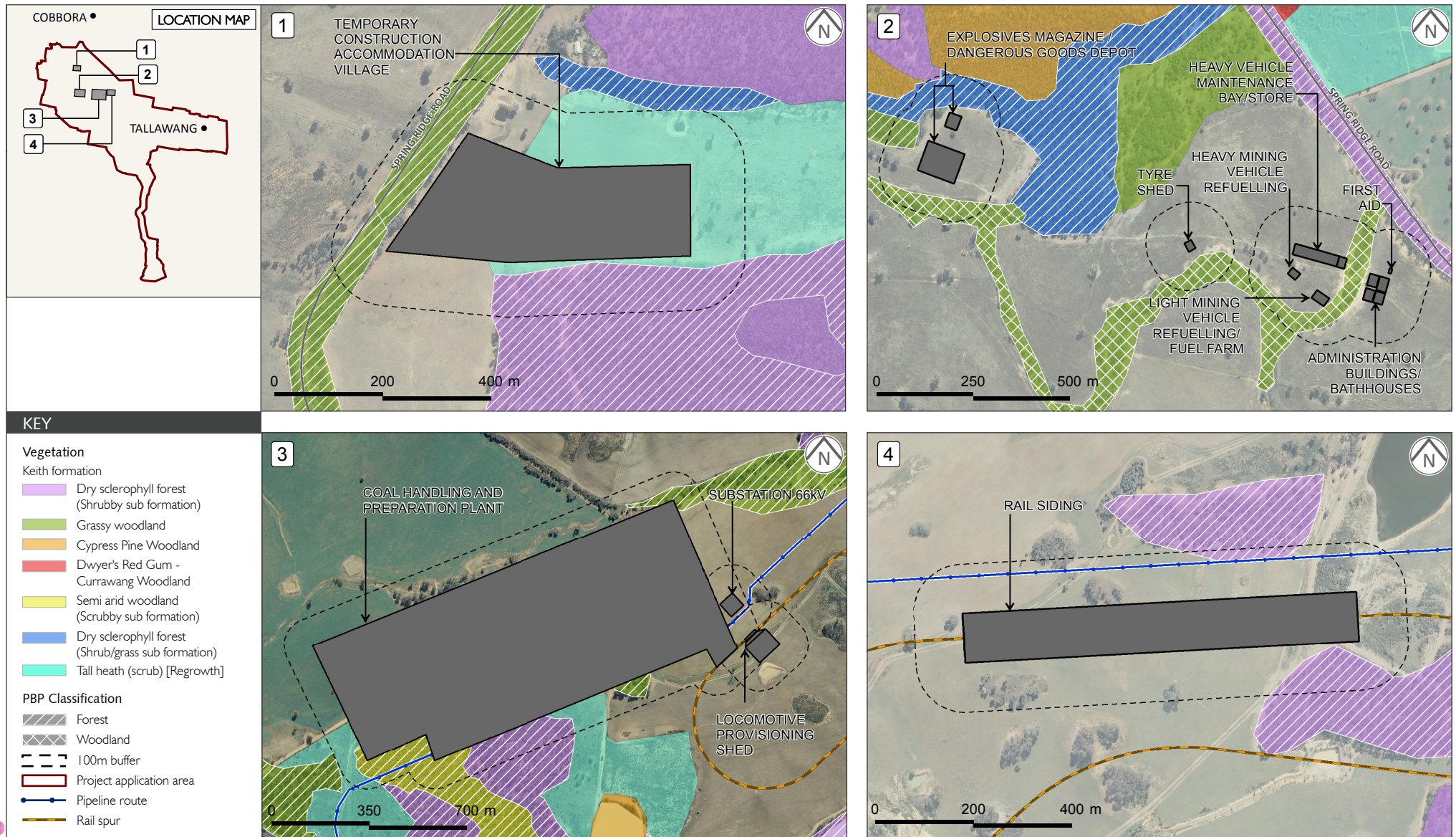
The majority of Project buildings will be on cleared land, except for some sparse regrowth next to the CHPP and the temporary construction accommodation village, which will be cleared. Some cleared land next to Project buildings may be allowed to regenerate. It is assumed that regenerating vegetation will be similar to nearby vegetation formations.

11.3.2 Slope

Project buildings on bushfire-prone land will be constructed on flat areas (Figure 11.2). However, there are slopes up to 18° near the explosives magazine/dangerous goods store. There are areas of extreme slopes along the banks of Laheys Creek, but they were not considered in the assessment because there is no significant bushfire hazard vegetation on the sloping sections of the creek's banks.

11.4 Environmental management

As with all rural settings, there is a risk that bushfires could occur in the area. There is therefore a risk that a bushfire could damage Project buildings. The potential for Project-related activities to ignite a bushfire also needs to be considered. A bushfire management plan will be prepared that will contain measures to minimise the risk of an existing bushfire damaging the Project or the Project initiating a bushfire. The management measures are described below.

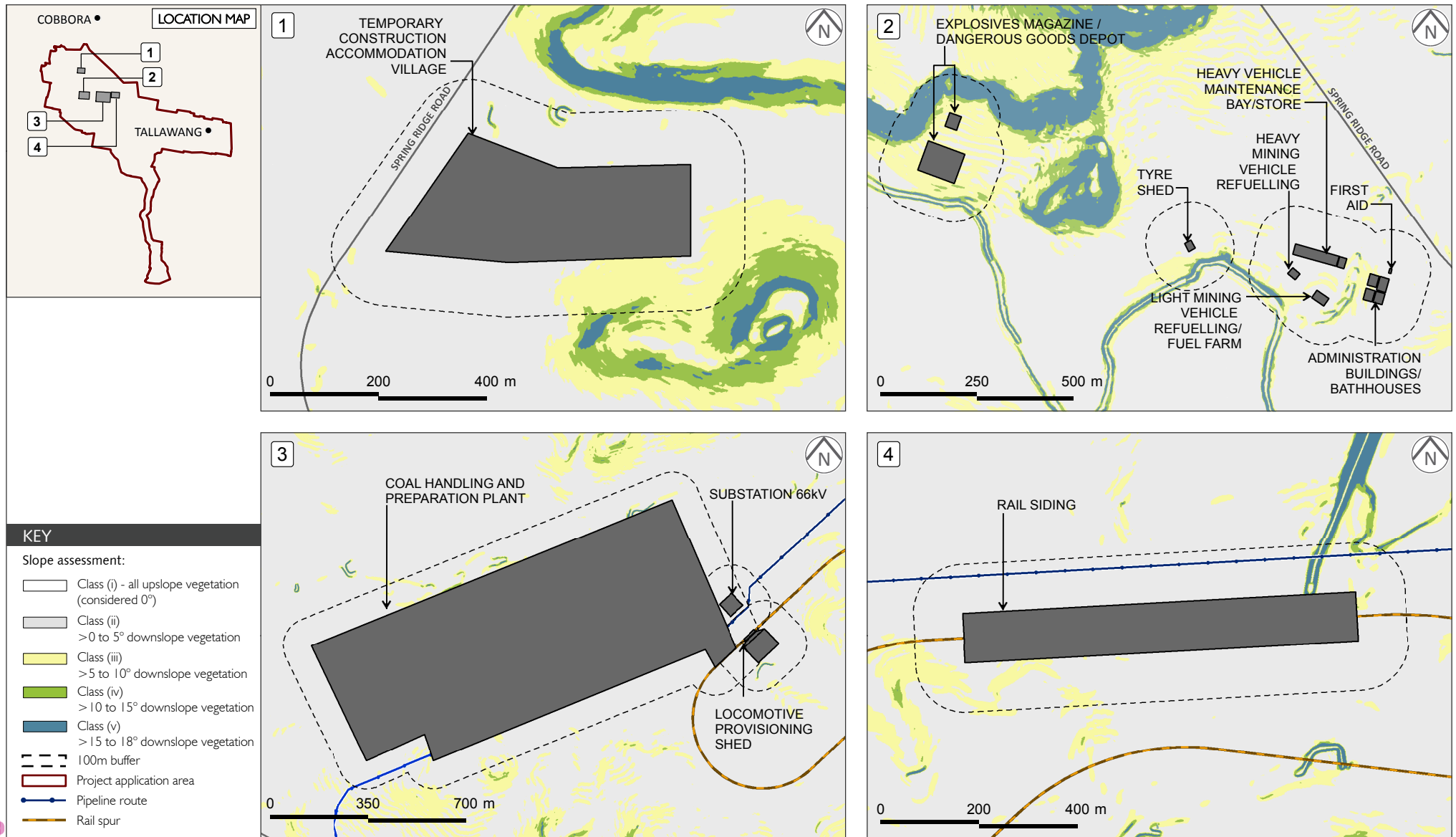


*Source: Vegetation mapping EMM February 2012, Planning for Bush Fire Protection - NSW Rural Fire Service 2006. Refer to bushfire assessment report for PBP classification method.

Predominant Bushfire Hazard Vegetation Near Indicative Locations of Proposed Project Buildings

Cobbora Coal Project - Environmental Assessment

Figure 11.1



Slope Near Indicative Locations of Proposed Project Buildings

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Figure 11.2

11.4.1 Asset protection zones (APZs)

APZs will be provided for all Project buildings on bushfire-prone land (Table 11.1). APZs will comprise roads, fire trails and managed vegetation. APZs will be provided on all sides of buildings if vegetation is allowed to regenerate in presently cleared areas.

The locations of Project buildings are indicative at this stage and will be surrounded by cleared areas that will meet APZ requirements (Table 11.1).

Table 11.1 Asset protection zones

Buildings	Asset protection zone (m)		Direction of vegetation from building (excluding any regeneration)
	Inner protection area	Outer protection area	
Main infrastructure area			
First aid	15	5	West and north-east
Bathhouse/administration building	15	15	West and north-east
Vehicle maintenance bays/heavy mine vehicles store	15	-	East
Heavy mining vehicle refuelling bays	15	-	South-west
Light vehicle refuelling bay/fuel farm	15	-	South-east and south-west
Tyre shed	20	-	South-east
Explosives magazine/dangerous goods depot	25	20	West, north and south
Coal handling and preparation plant	15	15	South-west and south-east
Rail siding	15	15	South-east and north
Temporary construction accommodation village	15	15	North, south and west

The following management measures will be implemented, as a minimum, in the inner protection areas:

- canopy cover will be kept below 15%;
- lower limbs of trees will be removed; and
- gardens will be over 10 m from windows and not under trees.

The following management measures will be implemented in the outer protection areas:

- canopy cover will be kept below 30%; and
- the understorey will be mown annually.

11.4.2 Services, access, operations and the Rural Fire Service

Water, gas and electricity services will be located and installed in a manner that minimises fire hazard.

i Water

The availability of water is a critical element in the control of a bushfire, and will be provided as follows:

- the Project water management system will provide water for fire fighting; including from the pipeline from the Cudgegong River, raw water dam and water tanks at buildings;
- initially, there will be three 100,000 L water carts fitted with water cannons to help with fire fighting. There will be more water carts as operations expand; and
- fire hydrants at buildings will be spaced, sized and pressured in accordance with Australian Standard 2419.1 - 2005 Fire Hydrant Installations – System Design, Installation and Commissioning.

ii Electricity and gas

The risk of bushfire to the Project electricity and gas supplies, and the risk these could ignite a bushfire or contribute to the consequences of a bushfire, will be minimised through the following:

- electrical transmission lines will preferably be placed underground; however, where overhead electrical transmission lines are used, they will be installed and managed in accordance with Ausgrid (2010) *NS179 Vegetation Safety Clearances*;
- AS/NZS 1596 - 2008 The Storage and Handling of LP Gas will be followed for bottled gas installation and maintenance; metal piping will be used;
- there will be at least 10 m between fixed gas cylinders and flammable materials;
- shielding will be placed on the side of the cylinders which face potential fires; and
- release valves on gas cylinders that are close to buildings will be directed away from the building and at least 2 m from combustible material; metal connections will be used.

iii Access

The following measures will enable access to the site for fire fighting:

- the existing Spring Ridge Road north of the mine infrastructure area will be upgraded during construction so that it satisfies the *Guide to Road Design* (Austroads 2009) guidelines for heavy vehicles;
- the realigned Spring Ridge Road will be designed in accordance with the *Guide to Road Design* guidelines for heavy vehicles;
- internal roads to buildings will be designed in accordance with the *Guide to Road Design* and the following PBP guidelines:
 - there will be a minimum vertical clearance of 4 m to any overhead obstructions including branches;

- bridges and pavements will be capable of carrying more than 15 t; and
- dead end roads are not recommended by PBP; however, when they are unavoidable, turning circles will be provided with a minimum 12 m outer radius at the end of these roads.
- parts of APZs may comprise fire trails, which will be designed as follows:
 - there will be a minimum carriageway of 4 m with 1 m clearance on each side;
 - there will be a maximum grade of 15° if sealed and less than 10° if unsealed;
 - there will be a minimum vertical clearance of 4 m to any overhead obstructions including branches; and
 - crossfall will not be more than 10°.

iv Bushfire construction levels

Based on the bushfire attack assessment, peripheral buildings of the temporary construction accommodation village will meet the requirements of bushfire attack level 40 (Section 8 of AS 3959 - 2009), and an APZ of 30 m will be maintained around the perimeter of the village.

v Mine operations

The following measures will reduce the risk of a fire or explosion in the mining or infrastructure areas initiating a bushfire:

- refuelling will take place away from vegetation;
- fire extinguishers will be maintained in buildings, vehicles and refuelling areas;
- there will be no smoking in, or next to, vegetated areas;
- water carts will be made available to help with fire fighting when required; and
- spill response kits will be available should there be a spill of flammable substances.

The following measures will be taken to reduce the likelihood of a bushfire or the consequences of a bushfire should one occur:

- a UHF/VHF communication system will enable rapid response to emergencies;
- vegetation hazard reduction, such as slashing, will take place regularly, especially during seasons when bushfires are more likely to occur; and
- the RFS will be contacted if there is a fire.

The Project is in the Dapper RFS district, which is serviced by a brigade with limited membership, training and equipment. CHC will:

- continue to liaise with the Gulgong RFS (a large brigade) to provide training to Dapper RFS members, CHC staff and CHC contractors to improve the region's bushfire-fighting capabilities;
- continue to participate with Gulgong RFS in bushfire risk assessments for the area surrounding the Project; and
- continue to contribute to bushfire risk reduction works in the area.

11.5 Impacts

The Project buildings will be designed and constructed to reduce the impact from a bushfire. Management measures will be used to: prevent a fire or explosion in the mining or infrastructure areas initiating a bushfire; reduce the severity of an existing bushfire through fire breaks; and by fighting fires with mine resources. Therefore, the Project is unlikely to be damaged by, initiate or contribute to the severity of a bushfire.

Further, the Project will strengthen community bushfire-fighting capabilities, decreasing bushfire risk in the area.

